Chapter 1

Colour Theory

Texture, which means the feel, appearance or consistency of a surface or a substance, is the perceived surface quality of visual art. Texturing demands competency in the techniques of art, as well as, design. Art, as you know, is the knowledge of the theory and techniques required to compose, produce and perform works of visual arts and sculptures.

The visual arts are the various art forms, which include drawing, painting, crafts, photography, videography, filmmaking, architecture and sculpture.

Design, which is the knowledge of techniques, tools and principles involved in the production of precision blueprints, drawings and models, is the process of selection of all visual elements used by artists to express themselves. These elements include shape, value, texture, colour, line, mass and space. The elements could be two-dimensional (2D) and three-dimensional (3D).

Texture instills an image with depth and detail. Any element that has texture attracts the viewer more as compared to a plain visual, as it tempts the viewer to imagine the feel of the texture. To promote the detailing in a texture, elements like colours, shadows, mid-tones, highlights and effective lighting are applied.

A Texturing Artist must have an in-depth understanding of the colour theory, and nature and

Notes

content of the artwork to be produced. They should be well versed with the vocabulary of terms specific to the visual arts, and two or three dimensional designs. The person must be able to apply different textures, using suitable software for image manipulation, and to maintain portfolios of artistic work, especially to demonstrate one's styles, interests and abilities.

In this Unit, you will learn about colour wheel, and the application of colour theory in texturing.

Session 1: Principles of Colour Theory

Light is made up of wavelengths of light, and each wavelength is a particular colour. Visible light waves consist of different wavelengths. These wavelengths range from 700 nm (nanometer) at the red end of the spectrum to 400 nm at the violet end. White light is the combination of many different frequencies of visible light from all parts of the visible spectrum. The colour of an object or material is determined by the wavelengths it absorbs and those it reflects. An object has the colour of the wavelengths it reflects. Thus, the colour that we see is a result of the wavelengths that are reflected back to our eyes. The primary colours of light are red, green and blue. Mixing these colours in different proportions can make all the colours of the light that we see. There are basically three categories of colours, based on the colour wheel—primary, secondary and tertiary colours.

Colour Theory

Colour theory is a term used to describe the rules and guidelines regarding the use of colour in art and design.

Colour theory focuses on colour mixing and visual effects of a specific colour combination. Combining colours is both an art, as well as, a science. You might be aware that there are primary colours, secondary colours, and tertiary colours.

Primary colours are a set of colours that can be combined to make a useful range of colours. Red, blue and yellow are the primary colours, and form the base of every other colour. Primary colours can be mixed together to produce secondary colours.

There are many theories for harmony. However, there are three basic categories of colour theory that are logical and useful—the colour wheel, colour harmony, and the context of how colours are used. Colour harmony provides a visual interest and a sense of order.

Colour wheel

The colour wheel can be used to help remember primary and secondary colours. Tertiary colours are combinations of primary and secondary colours (Figure 1.1).

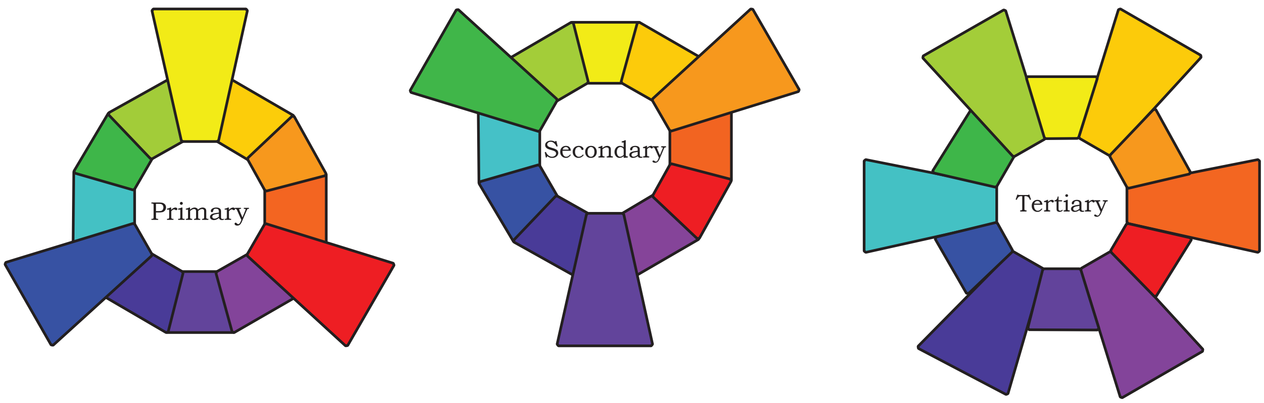


Fig. 1.1: Primary, Secondary and Tertiary Colours

As a Texturing Artist, an individual develops textures for the digital media, which could be in the form of 2D or 3D art that may be overlaid onto a polygon mesh to create a realistic 3D model. The Texturing Artist must understand how a particular colour behaves in relation to other colours and shapes, which is a complex part of the colour theory. By selecting the right colour from the colour wheel, the Texturing Artist can create an ambience of elegance, warmth or tranquility using cool or warm colours.

Colour harmony

Colour harmony refers to the property which is created through an aesthetically pleasing colour combinations.

Notes

Colour context

The relationship of values, saturations and the warmth or coolness of hues should be understood by the Texturing Artist, as these create differences in our perception of colour.

History of Colour Theory

The 'colour theory' principles were first written by Leone Battista Alberti (c.1435). Colour theory is a set of principles used to create harmonious colour combinations. A harmonious colour is the one that is next to another on the colour wheel or very close to it. For example, red is near rust, which is near terracotta. It guides us to the practical way of colour mixing.

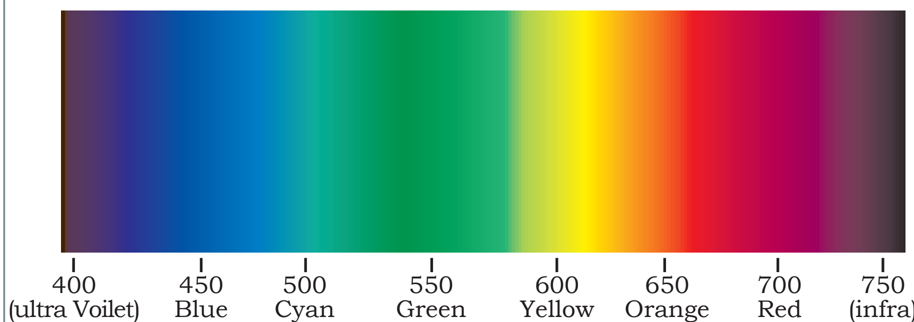


Fig. 1.2: Colour arrangement within the visible range of light

The first colour wheel was designed by Sir Isaac Newton in 1666. He worked successfully by splitting white sunlight into six different colour beams, namely red, orange, yellow, green, cyan and blue (Figure 1.2). Then, he joined together the two ends of the colour spectrum to show the natural progression of colours. Newton had associated colours with the note of a musical scale.

A century later, Johann Wolfgang von Goethe worked on the psychological effects of colours. He noticed that blue gives a psychological feeling of coolness and yellow gives a warming effect. According to the frequency of different colours, colours are arranged within the visible range of light. Goethe, later, created a colour wheel, which depicted the psychological effect of each colour. He bifurcated

all colours into two groups —'plus side' (from red through orange to yellow) and 'minus side' (from green through violet to blue). Excitement and cheerfulness were placed in the area of plus side colours, whereas, weakness and unsettled feelings were associated with the minus side. The current form of colour theory was developed by Swiss colour and art theorist Johannes Itten, who taught at the School of Applied Arts in Weimar, Germany.

The 'colour chords' were developed by Itten (Figure 1.3), who also modified the colour wheel. Itten's colour wheel is based on the primary colours — red, yellow and blue and it includes 12 hues of the same.

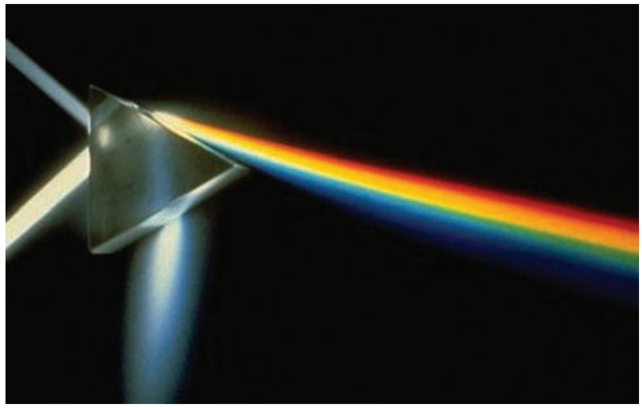


Fig. 1.3: A view of colour chords

Basic Terms Related to Colour Theory

Hue, saturation and value are the three components of a colour.

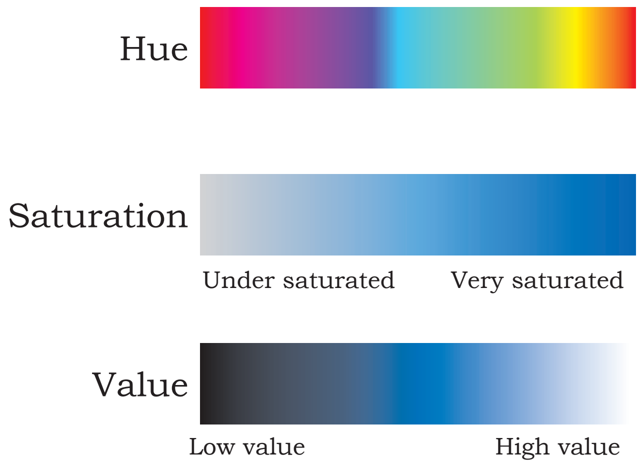


Fig. 1.4: A view of hue, saturation and value

Hue

It is one of the main properties of a colour, which permits a colour to be classified as red, yellow, green, blue, or an intermediate colour between any contiguous pair of these colours (Figure 1.4 and 1.5).

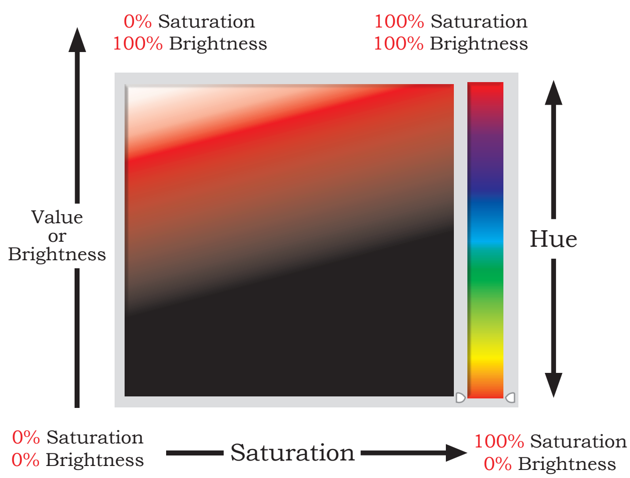


Fig. 1.5: Colour palette of Adobe Photoshop, showing hue, saturation and brightness graph

Saturation

Saturation in colour theory can be defined as the purity of a colour. Hundred per cent saturation is the maximum purity limit of a colour (Figure 1.4).

Value

The colour value is the brightness or lightness of a colour (Figure 1.4 and 1.5).

Tint

Tint can be achieved by adding white to any hue.

Tone

Tone can be achieved by adding grey to any hue.

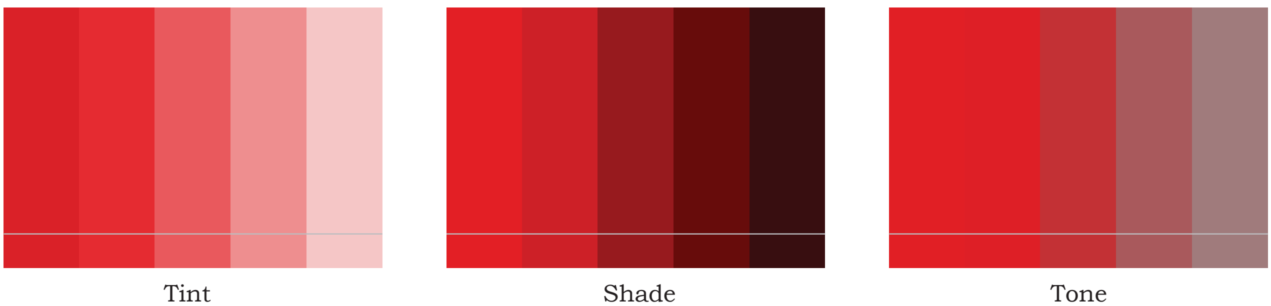


Fig. 1.6: Colour palette of Adobe Photoshop showing tint, shade and tones from white to hue, black to hue and grey to hue, respectively

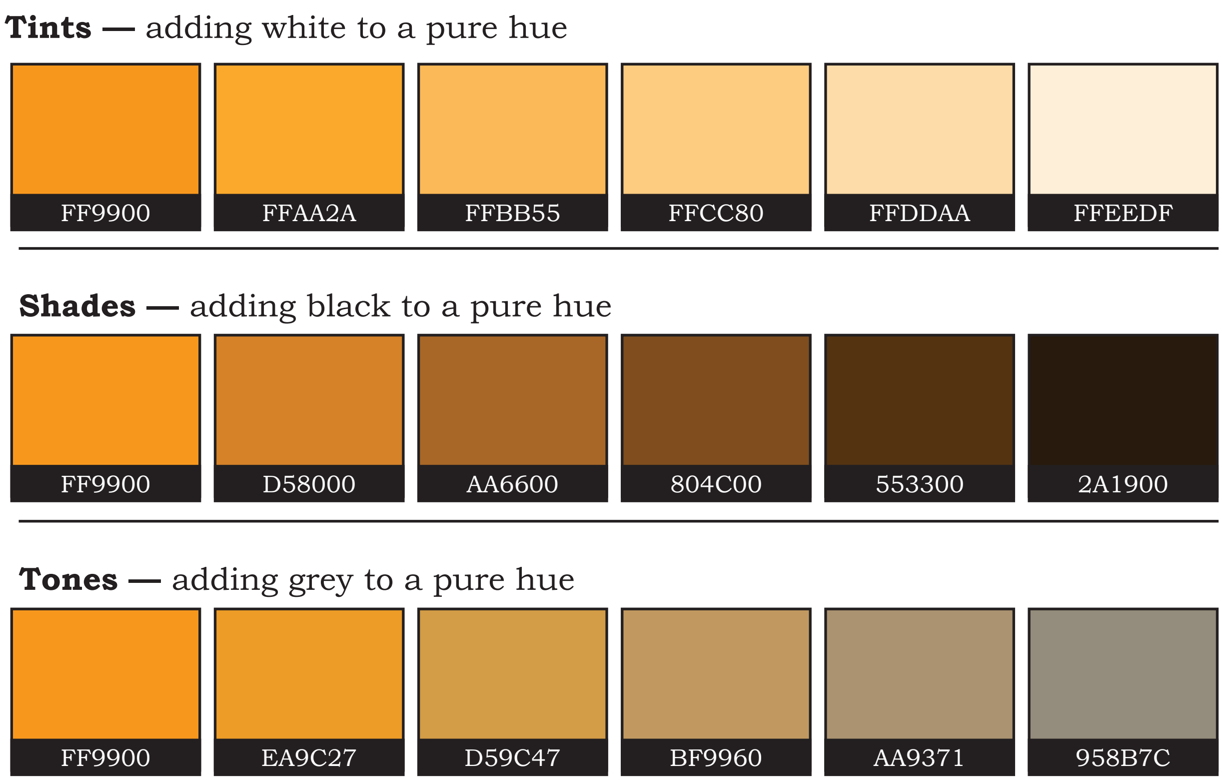


Fig. 1.7: Colour Palette of Adobe Photoshop showing tint, shade and tone

Shade

Shade can be achieved by adding black to any hue. (Figure 1.6 and 1.7)

NOTES

Practical Exercises

Activity 1

Creating a colour wheel with red, green and blue colours.

Material required

Cardboard, water colours, brush, water and colour mixing palette

Procedure

- Create a circular disc of a cardboard or a white sheet.
- Divide this disc into three equal parts with a pencil and scale, and paint each part with red, green and blue, respectively.
- Insert a stick having a pointed tip, or a sharpened pencil in the centre of the coloured disc.
- Now, spin this disc with the help of the stick or pencil.
- Observe the colour that the circular disc shows when rotated.
- Write down the colours that you saw, while spinning the disc.

Activity 2

Creating a colour wheel with cyan, magenta, yellow and black

Material required

Cardboard, colours, brush, water and colour mixing palette

Procedure

- Cut a white paper into a circular disc.
- Divide the disc into four equal parts, with a pencil and scale.
- Now, paint each part with cyan, magenta, yellow and black, respectively.
- Insert a stick having a pointed tip or a sharpened pencil in the centre of the coloured disc.
- Now, spin this disc with the help of the stick or pencil.
- Observe the colour that the circular disc shows when rotated.
- Write down the colours that you saw while spinning the disc.

NOTES

Check Your Progress

A. Fill in the Blanks

1. The property that permits a colour to be classified as red, yellow, green, blue or an intermediate colour between any contiguous pair of these colours is known as ____________.
2. The purity of colour is known as _____________.
3. The colour ____________ is the brightness or lightness of colour.
4. Tints are obtained by adding _______________ to a pure hue.
5. Shades are obtained by adding ________________ to a pure hue.
6. Tones are obtained by adding_______________ to a pure hue.
7. A colour theory can be broken down into three parts—colour _____________, colour harmony and colour context.

What have you learnt?

On the completion of this Session, you will be able to:

- describe the basic colour theory principles.
- explain the meaning of terms related to colour theory.

SESSION 2: COLOUR WHEEL

A colour wheel or colour circle is an abstract illustrative organisation of colour hues around a circle that shows the relationship between primary, secondary and complementary colours. Colour wheel or colour circle was developed by Sir Isaac Newton by taking the colour spectrum and bending it into a circle. If you follow the colour wheel, you will find the same order of the colour spectrum—red, orange, yellow, green, blue, indigo (blue-violet), and violet.

Most colour wheels are based on three primary colours, three secondary colours and the six intermediates known as tertiary colours.

According to the colour theory, harmonious colour combinations use any two colours, which are opposite to each other on the colour wheel. Any three colours are equally spaced around this colour wheel forming a triangle.

Types of Colour Wheel

Depending on different mediums of using colour, colour wheel can be categorised into the following two types.

Artist colour wheel

The Artist colour wheel is the chart which is generally used for mixing colours for painting and artwork (Figure 1.8).

Fig. 1.8: Artist colour wheel

Technical colour wheel

Technical colour wheel is used to work with any technical device like electronic display and printers (Figure 1.9). It can be categorised into the following two types:

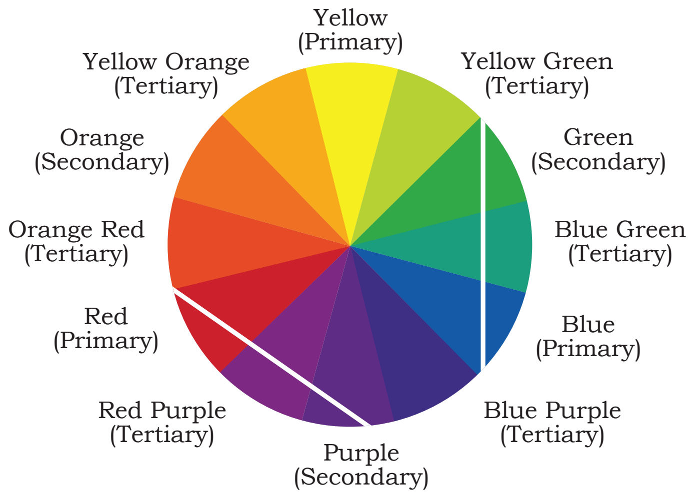
Digital colour wheel

Mixing colours digitally is not the same as mixing them physically, therefore, it is important to understand digital colour mixing. Screens use an additive colour model (the additive primary colours are Red, Green, and Blue i.e., RGB) rather than the reflective colour model. Television, cameras, scanners and computer monitors are based on the additive system of colour, where red, green and blue light projected together yield white colour. Digitally storing an image requires that it should be broken down into a grid of tiny pixels.

Print media colour wheel

Print media creates colour by subtracting or absorbing certain wavelengths of colour while reflecting other wavelengths back to the viewer. This phenomenon is called subtractive colour model. It uses cyan, magenta and yellow (CMY) pigments or dyes to subtract portions of white light illuminating an object to produce other colours. Traditionally, the primary colours used in subtractive process were red, yellow and blue, as these were the colours that Painters used to mix to get all the other hues. The subtractive colour system involves colourants and reflected light. Colour paintings, colour photography and colour printing processes use the subtractive process to reproduce colour.

(a)



(b)

Fig. 1.9: Technical colour wheel (a) and (b)

Types of Colours

The colour wheel is made up of three types of colours—primary, secondary and tertiary. Let us now try to understand the three types of colours and their formation.

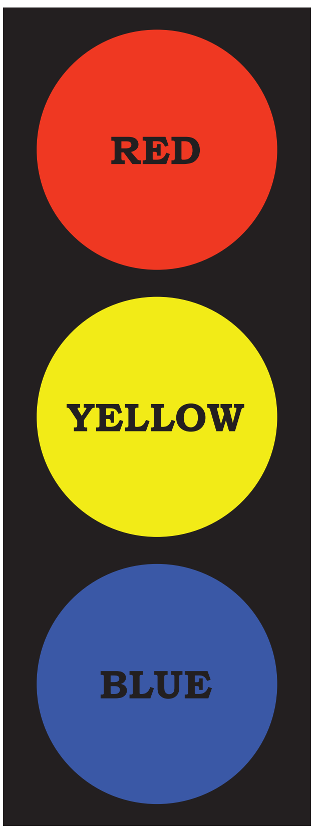


Fig. 1.10: Primary colours

Primary colours

Primary colours are the basic colours on the colour wheel. These are called so because no two colours can be mixed to create a 'primary colour'. All other colours found on the colour wheel can be created by mixing the primary colours (Figure 1.10). The three primary colours of artistic colour wheel are Red, Yellow and Blue (RYB).

Secondary colours

Secondary colours are created by mixing equal parts of any two primary colours. The secondary colours are orange, green and purple.

Red + Yellow	=	Orange
Yellow + Blue	=	Green
Blue + Red	=	Violet (purple)

Tertiary colours

A tertiary colour is made by mixing one primary colour and the adjacent secondary colour. Such colours are created by mixing equal parts of a primary and

secondary colour. There are six tertiary colours, namely red-purple, red-orange, blue-green, yellow-green, blue-purple, and yellow-orange.

Practical Exercises

Activity

Mixing two colours to generate a third colour

Material required

Poster colours (red, yellow and blue), colour mixing palette, water and drawing sheets

Procedure

- Mix the following colours in equal proportion to generate a third colour:
  1. Red and yellow
  2. Yellow and blue
  3. Blue and red
- Write a note on the new colours generated.

Check Your Progress

A. Fill in the Blanks

1. A colour wheel shows the relationship between ______________, secondary and complementary colours.
2. Colour wheel can be categorised into ______________ and technical colour wheel.
3. Technical colour wheel can be categorised into ______________ and print media colour wheel.
4. Mixing red and yellow gives ______________.
5. Mixing yellow and blue gives ______________.
6. Mixing red and blue gives ______________.
7. In RYB artistic colour wheel, R stands for ______________, Y for ______________and B for ______________.

B. Subjective Questions

1. What are the two types of technical colour wheel? Write a short note on each of them.
2. Write a short note on the following:
   (i) Primary colours
   (ii) Secondary colours
   (iii) Tertiary colours

NOTES

NOTES

What have you learnt?

On the completion of this Session, you will be able to:

- differentiate between primary and secondary colours.
- differentiate between secondary and tertiary colours.
- mix primary colours to prepare secondary and tertiary colours.
- create a colour wheel from primary colours.
- distinguish between artistic and technical colour wheel.

SESSION 3: DIGITAL COLOUR WHEEL

You have learnt in the previous session that a digital colour wheel, also called as ‘RGB colour model’ is an ‘additive colour model’. In this model, Red, Green, and Blue light are added together in various proportions to reproduce a broad spectrum of colours. The model derives its name from the first letter of the three additive primary colours—Red, Green and Blue.

The RGB colour model is used to represent and display images in electronic display devices, such as television, projector, and monitor. It is also used in digital photography. The typical RGB output devices are colour television, monitor, multimedia projector and mobile phone display, which use either TFT (Thin Film Transistor), LCD (Liquid Crystal Display), LED (Light Emitting Diode), OLED (Organic Light Emitting Diode) or Plasma Technology and RGB input devices, which include video cameras, image scanners and digital cameras. Colour printers, on the other hand, are not RGB devices but subtractive colour devices, typically CMYK [Cyan Magenta Yellow Key (Black)] colour model (Figure 1.11).

To form a colour with RGB, three coloured light beams (red, green and blue) must be superimposed (for example, by emission from a black screen, or by reflection from a white screen). Each of the three beams is called a component of that colour, and each can have an arbitrary intensity, from ‘fully off’ to ‘fully on’ in the mixture. The RGB model is an additive colour model, in which the three light beams are added together and wavelengths of the light spectra are added to make the final spectrum of the colours.

Zero intensity for each component gives the darkest colour, and full intensity of each gives a white. The quality of white depends on the nature of primary light sources, but if they are properly balanced, the result is neutral white. When the intensity of all component colours is the same, the result is a shade of grey, which is darker or lighter, depending on the intensity. When the intensities are different, the result is a colourised hue, more or less saturated, depending on the difference of the strongest and weakest intensities of the primary colours employed.

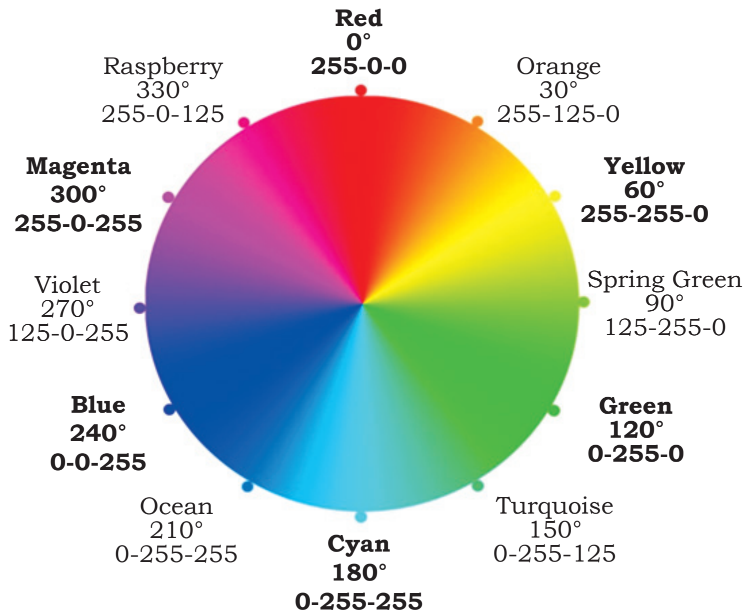


Fig. 1.11: RGB colour wheel

When one of the components has the strongest intensity, the colour is a hue near that primary colour (reddish, greenish or bluish). When two components have the same strong intensity, then the colour is a hue of a secondary colour (a shade of cyan, magenta or yellow). A secondary colour is formed by mixing two primary colours of equal intensity. Cyan is formed by adding green and blue, magenta with red and blue, and yellow with red and green. Every secondary colour is the complement of one primary colour. When a primary and its complementary secondary colours are added together, the result is white. Cyan complements red, magenta, green, yellow and blue (Figure 1.12).

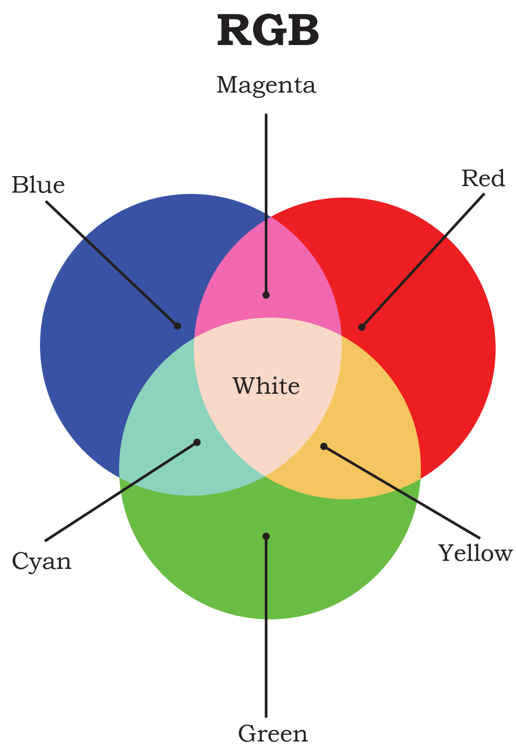


Fig. 1.12: RGB colour model

A digital image created in RGB mode stores each colour value in an '8 Bits Channel'. Hence, red value is stored in an 8 Bits Channel, green in a separate 8 Bits Channel, and blue in yet another 8 Bits Channel. Hence, the RGB image has 8 Bits × 3 Channels = 24 Bits image. This image will have 2^{24} colour = 16.78 million colour shades (true colour image).

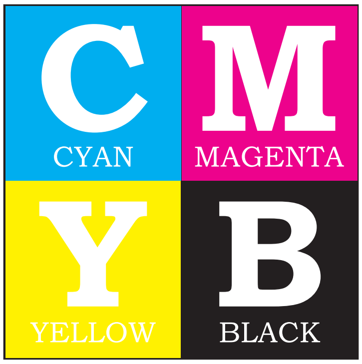


Fig. 1.13: CMYK colour model

Print Media Colour Wheel

- Primary colours for print media colour wheels are cyan, magenta and yellow.
- Digital colour wheels are often called CMYK model (Figure 1.13).
- CMYK colour model is a subtractive colour model.

The CMYK colour model (a four colour process model) is a subtractive colour model used in colour printing. It is used to describe the colour printing process. CMYK refers to the four colour inks used in printing, which are — cyan, magenta, yellow and key (black) (Figure 1.14).

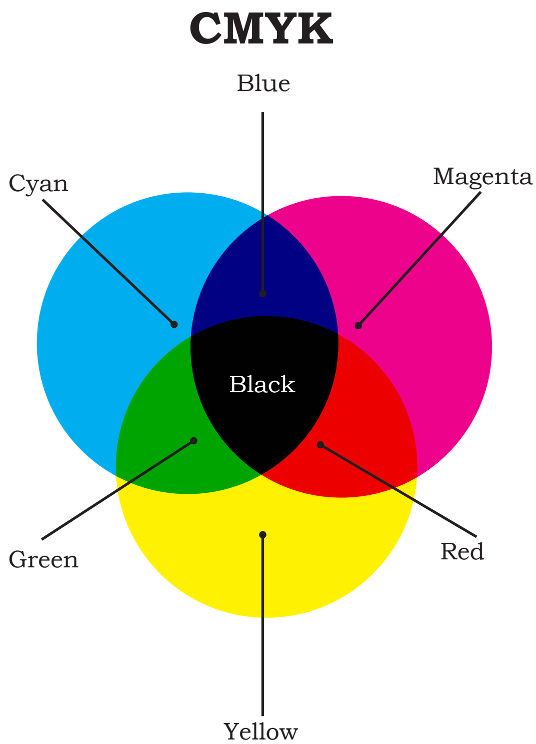


Fig.1.14: Subtractive colours or CMYK colour model

The 'K' in CMYK represents 'Key' because in four-colour printing, cyan, magenta and yellow printing plates are carefully 'keyed' or aligned with the 'key' of the black key plate (Figure 1.14). The 'K' in CMYK stands for Key, which denotes 'black'. The reason for not using the 'B' of 'black' is that this letter represents 'blue' in the RGB model, which was developed earlier. CMY being the complementary (subtractive) colours, which when mixed together must theoretically generate 'black' (absence of all colours). The 'black' generated by mixing cyan, magenta and yellow inks is not exactly black, it generates a 'muddy brown' colour. Hence, four-colour printing uses the extra fourth colour pigment, i.e., black ink, to create a pure black colour.

A digital image created for the print media in CMYK mode stores each colour value in an 8 Bits channel. Hence, cyan colour value is stored in an 8 Bits channel; magenta is stored in a separate 8 Bits channel, yellow in another 8 Bits channel, and black in yet another 8 Bits channel. Hence, a CMYK image has 8 Bits × 4 Channels = 32 Bits Image.

Another type of 32 Bits image is RGB + α-Channel image. An α-Channel saves the transparent background of that image in an 8 Bits channel. Hence, it has 24 Bits of RGB and 8 Bits of α-Channel, thereby, creating a 32

Bits image. These types of images with α-Channel are used in videos and 3D animation. The alpha channel stores transparency information. It is extremely useful for compositing digital images together.

Practical Exercises

Activity

Understanding colour mixing

Material required

White light LED torch, translucent plastic papers (gelatin paper) of red, green and blue colours

Procedure

- Cover red, green and blue translucent plastic sheets (gelatin paper) over the white LED torchlight.
- Now, go to a dark room or switch off the lights and mix each colour with the other, and see the output or resultant colour generated on the wall due to mixing of the coloured beams of light from the torch. If you mix all the three colours (RGB), you get pure white light. The more light you add, the brighter the colour mix becomes.
- Note down the colours formed.

Check Your Progress

A. Fill in the Blanks

1. The main purpose of RGB colour model is for representation and display of images in ____________ media.
2. Input devices, such as video camera, image scanner and digital camera use ______________colour wheel.
3. Primary colours for print media colour wheel are cyan, magenta, _____________________ and black.

B. Subjective Questions

1. Write a short note on RGB colour model.
2. Write a short note on CMYK colour model.

What have you learnt?

On the completion of this Session, you will be able to:

- describe the RGB model.
- select colours from the colour wheel as per the requirement.

Notes

NOTES

SESSION 4: RGB DISPLAY MECHANISM

In the previous sessions, you have learnt that common application of the RGB colour model is the display of colours on a Cathode Ray Tube (CRT), Liquid Crystal Display (LCD), plasma display, or Organic Light Emitting Diode (OLED) display, such as television and computer monitor. You have also learnt that digital storage of an image requires that it should be broken down into a grid of tiny pixels.

Pixel

Pixel is the basic or fundamental unit of an image. One pixel has only one colour information. However, each pixel is made up of three different colour components, i.e., red, green and blue in different percentages. The value of the pixel at any point denotes the intensity of image at that location, and that is also known as grey level. In an 8 bits grey scale image, the value of the pixel is between 0 and 255. The value 0 means absence of light. It means that 0 denotes dark, which means that whenever a pixel has a value of 0, black colour would be formed at that point.

The value of a pixel at any point corresponds to the intensity of the light photons striking at that point. Each pixel stores a value proportional to the light intensity at that particular location. A digital colour image pixel is just numbers representing an RGB data value (Red, Green, Blue).

A cathode ray tube consists of three parts: the electron gun assembly, the phosphor viewing surface and the glass envelope. Each phosphor layer is responsible for one colour. The phosphors are deposited in the form of very small dots in a repeated pattern across the screen— red, green, blue and so on. It can produce a maximum of four to five colours. The red, green and blue phosphor are coated one behind the other in layers. If a low speed beam strikes the CRT, only the red coloured phosphorus is activated, a slightly accelerated beam would activate both red and green and a much more activated one would add the blue component also. It works on the principle

of combining the basic colours— Red, Green and Blue (RGB).

Pixel Resolution

You must have heard about a high and low resolution photo. A '300 DPI photo' is sometimes referred to as a high resolution photo. But a high resolution photo generally means a high pixel per inch (usually 300 or greater) when printed. Low resolution pictures are of less than 300 DPI. Thus, the more pixels per each inch, the better quality print you will get when you print an image. Resolution is a numerical digit by which the quality of an image can be measured. It is calculated as the number of pixels present per inch of an image. It can be defined in many ways, such as pixel resolution, spatial resolution, temporal resolution, and spectral resolution.

Each pixel on the screen is built by driving three small and close, yet separated RGB light sources. At a general viewing distance, the separate sources are indistinguishable, which is tricky to our eye and show a given solid colour. All pixels arranged together in a rectangular screen surface conforms the colour image.

In pixel resolution, the term resolution refers to the total number of count of pixels in a digital image. For example, if an image has A rows and B columns, then its resolution can be defined as A × B. Pixel resolution can be defined with a set of two numbers. The first number is the width of the picture, or the pixels across columns, and the second number is height of the picture, or the pixels across its width. We can say that the higher the pixel resolution, the higher is the quality of the image.

A digital camera can capture data based on the mega-pixel ability of its charge-coupled device (CCD). A digital camera has a sensor that converts light into electrical charges. The image sensor employed by most digital cameras is a charge coupled device. An 8 mega-pixels digital camera shoots at approximately 3264 × 2448 pixels. Monitor resolution is measured strictly by pixel width and height. Some common settings are 1280 × 1024, 1920 × 1080 or 2880 × 1800.

Notes

NOTES

Practical Exercises

Activity 1

Understanding photo scan resolution

Material required

Colour image scanner, Adobe Photoshop, a colour or black and white laser printer

Procedure

- Scan a colour photo printed on a magazine in 50 DPI (dots per inch, which technically means printer dots per inch) and 600 DPI mode of the scanner.
- Now, take a printout from a colour or black and white printer, and observe the blurriness or sharpness of the picture.
- Compare it with the original magazine photo.
- Write down your observations in your notebook.

Activity 2

Understanding the working of CRT monitor

Material required

A computer with Internet connection

Procedure

- Surf the Internet and search for 'How CRT monitor works'.
- Study the diagram of CRT on internet.
- Draw the diagram showing the colour electron beams in a CRT monitor.

Check Your Progress

A. Fill in the Blanks

1. Pixel is the basic or fundamental unit of an ____________.
2. A single pixel has _____________colour information.
3. Resolution is a ________________digit by which the quality of an image is measured.
4. Resolution is calculated as the number of __________ present per inch of the image.

B. Subjective Questions

1. Write a short note on pixel.
2. What is pixel resolution?

What have you learnt?

On the completion of this Session, you will be able to:

- describe the meaning of 'pixel'.
- differentiate between high and low resolution.

Session 5: Colour Schemes

Colour schemes are logical combinations of colours on the colour wheel. The colour scheme is used to create an aesthetic feeling of style and appeal on an image. Colour harmony is the procedure of creating colour schemes, depending on how they look together.

Monochromatic Colour Scheme

'Monochromatic' means one (mono) colour (chroma). Hence, a monochromatic colour scheme is made up of hues or shades of one colour. The monochromatic colour scheme uses variations in lightness and saturation of a single colour. This scheme looks clean and elegant. Monochromatic colours go well together, producing a soothing effect. It is easy on the eyes, especially blue or green hues. You can use it to establish an overall mood (Figure 1.15).

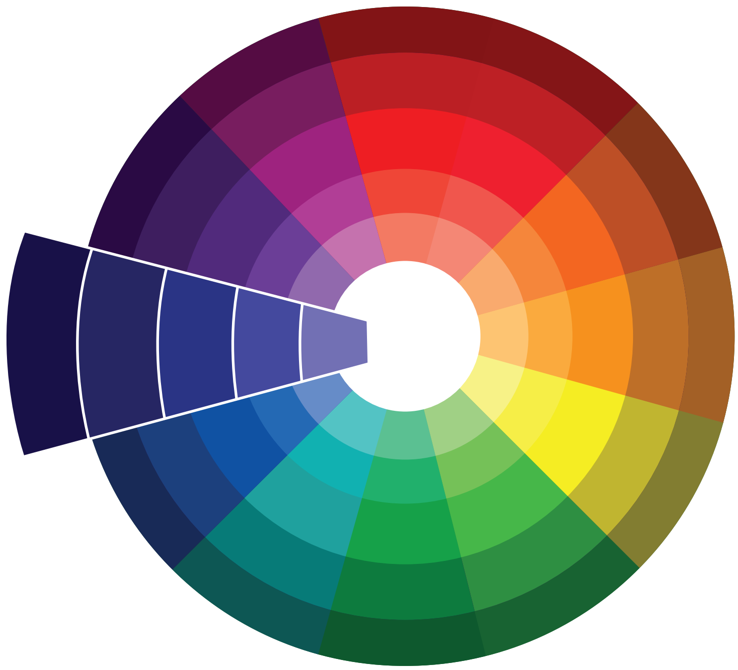


Fig. 1.15: A view of monochromatic colour scheme

The primary colours can be integrated with neutral colours, such as black, white or grey. The monochromatic scheme is easy to manage, and always looks balanced and visually appealing. However, when using this scheme, it can be difficult to highlight the most important elements. This scheme lacks colour contrast. It is not as vibrant as the complementary scheme.

Every colour has its own meaning.

Johann Wolfgang von Goethe

Analogous Colour Scheme

The analogous colour scheme uses colours that are adjacent to each other on the colour wheel. One colour is used as a dominant colour, while others are used to enrich the scheme. The analogous colour scheme is similar to monochromatic colour scheme, but offers more tones. It is advisable to avoid using too many hues in the analogous scheme as this may ruin the harmony.

Avoid combining warm and cool colours in this scheme as they can destroy the present analogous situation. Examples: Blue, blue-green, green, yellow-green, red, red-purple, purple, blue-purple.

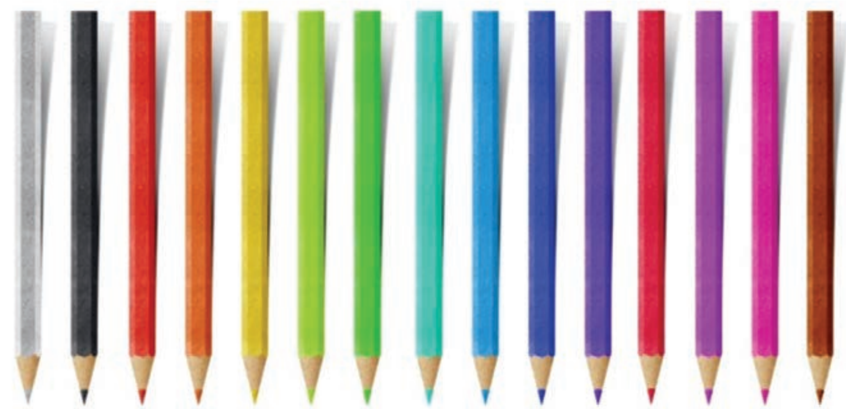


Fig. 1.16: Analogous colour scheme

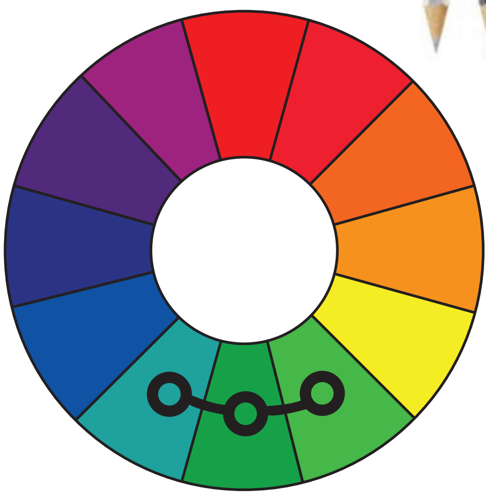


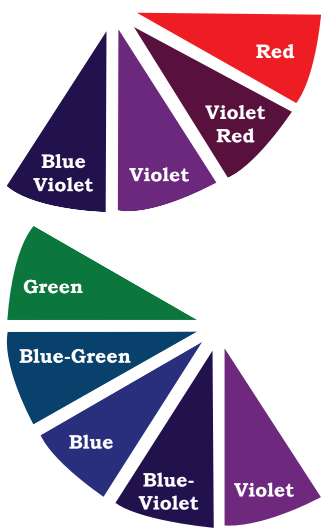
Fig. 1.17: Placement of warm colour against cool in complementary colour scheme

Complementary Colour Scheme

The complementary colour scheme consists of two colours that are opposite to each other on the colour wheel. For example, red and green are complementary colours, another example is blue and orange. This scheme looks best when you place a warm colour against a cool colour (Figure 1.17), such as cyan, which is a complement of red, can be made by mixing equal amounts of green and blue colour.

This scheme is intrinsically high-contrast. When using the complementary scheme, it is important to choose a dominant colour and use its complementary colour for accents.

By using one colour for the background and its complementary colour (Figure 1.18) to highlight the important elements, you will get colour dominance combined with sharp colour contrast.



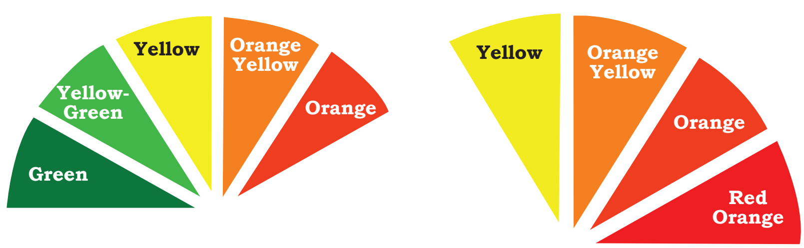


Fig. 1.18: Complementary colour scheme

The complementary colour scheme offers stronger contrast than any other colour scheme and draws maximum attention. This scheme is harder to balance than monochromatic and analogous schemes, especially when de-saturated (less pure) warm colours are used (Figure 1.19).

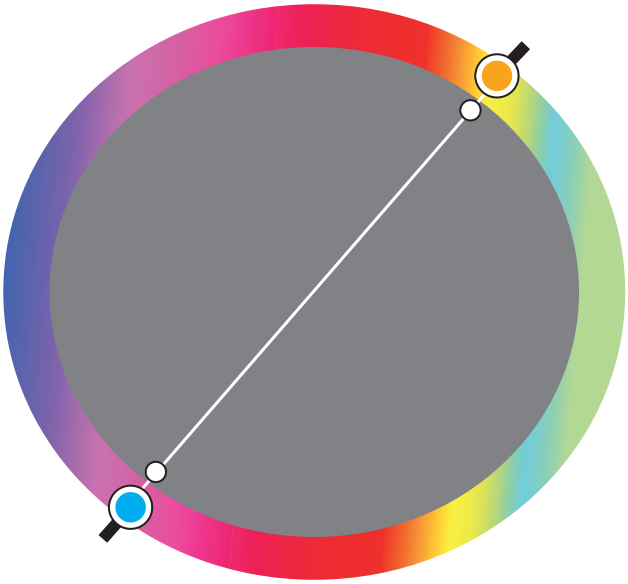


Fig. 1.19: De-saturated colour scheme

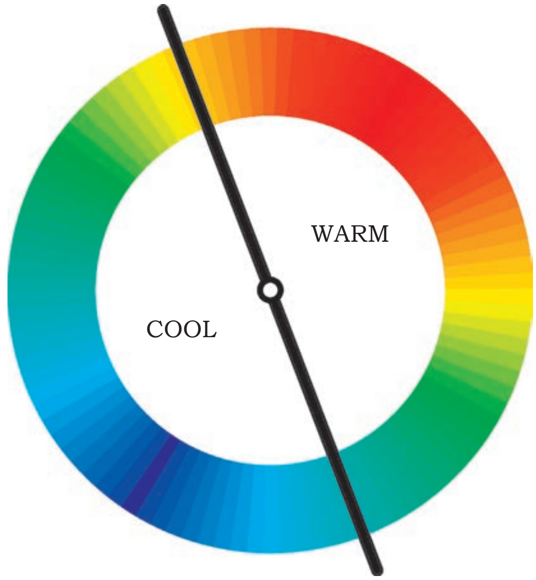


Fig. 1.20: Warm and cool colours

Warm and Cool Colours

Warm colours are made of a combination of red, yellow and orange. As the name indicates, they tend to make you think of sunlight and heat. Warm colours are vivid and energetic and tend to advance in space (Figure 1.20). Examples are red, yellow and orange.

Cool colours are associated with cool things and give a calm and soothing feeling. Cool colours remind us of water and sky. Examples are blue, purple and green.

White, black and grey are considered to be neutral colours.

Practical Exercises

Activity 1

Creating different shades of cool colours

Material required

Adobe Photoshop

NOTES

Procedure

- Create five overlapping circles having different shades of cool colours (blue or green tones).
- Create a JPG file and view the same in full screen mode in Adobe Photoshop.
- Write down the feeling you had while observing the circles.
- Does the image give you peace of mind?
- Perform a similar activity for warm colours and note down your observations.

Check Your Progress

A. Fill in the Blanks

1. A colour scheme, which consists of two colours that are opposite to each other on the colour wheel, is known as ________________colour scheme.
2. The scheme which offers stronger ________________ than any other colour scheme and draws maximum attention is known as complementary colour scheme.
3. When colours are made with orange, red, yellow and a combination of them, these colours are called ________________colours.
4. When colours, such as blue, green and light purple are used for mixing purpose, then they are known as ____________colours.

B. Subjective Questions

1. Differentiate between monochromatic, analogous and complementary colour schemes.
2. Write a short note on cool and warm colours.

What have you learnt?

On the completion of this Session, you will be able to:

- distinguish between monochromatic, analogous and complementary colour schemes.
- describe the advantages and limitations of various colour schemes.
- create colour schemes as per the requirement.